bath by extraction with an organic solution containing a reagent, which forms with copper a complex compound, which is extracted by the organic solution, the alkaline etch bath being recirculated to renewed etching, the copper-containing organic solution being contacted, in a retraction step, with an aqueous solution of an acid so that copper passes from the organic solution to the aqueous solution, and the organic solution being recirculated from the reextraction step to renewed extraction, characterised by the steps of passing the copper-containing acid solution obtained from the re-extraction step to a copper recovery operation, diverting a flow from the copper-containing acid solution before the operation for recovering copper from the same and adjusting the copper content of said flow so that it will be lower than the copper content of the acid solution which is used in the copper recovery operation, and recirculating said flow having an adjusted copper content to the operation for electroplating printed boards for use therein.

- 5. (Amended) A process as claimed in claim 1, characterised by carrying it out as a closed process, in which the plated printed board is etched with said alkaline etch bath and the acid solution from the plating is used for said re-extraction step.
- 6. (Amended) A process as claimed in claim 1, characterised by adjusting the copper content so that the ratio of copper content of said acid solution is > 0.3:1.
- 7. (Amended) A process as claimed in claim 6, characterised by adjusting the copper content so that the ratio is in the range of 0.60:1 0.95:1.

Cont 12

09913938.100201

- 8. (Amended) A process as claimed in claim 1, characterised by carrying out the plating in the form of pulse plating with wave-shaped pulses of current intensity.
- 9. (Amended) A process as claimed in claim 1, characterised by carrying out the plating in the form of pulse plating with pole reversal.
- 10. (Amended) A process as claimed in claim 8, characterised by carrying out the pulse plating with a pulse length of the wave-shaped pulses in the range of 1-500 ms.
- 11. (Amended) A process as claimed in claim 8, characterised by adjusting the period of time during which the printed board acts as cathode in the pulse plating to a value in the range of 1-200 s.



- 12. (Amended) A process as claimed in claim 8, characterised by adjusting the period of time during which the printed board acts as anode in the pulse plating to a value in the range of 0.1-20 s.
- 13. (Amended) A process as claimed in claim 8, characterised in that the maximum current intensity during the period of time when the printed board acts as cathode in the pulse plating is 10 A/dm<sup>2</sup>.

- 14. (Amended) A process as claimed in claim 8, characterised in that the maximum current intensity during the period of time when the printed board acts as anode in the pulse plating is 40 A/dm<sup>2</sup>.
- 15. (Amended) A process as claimed in claim 1, characterised by adjusting the copper content of the flow which is recirculated to the plating by the addition of acid from the re-extraction step.
- 16. (Amended) A process as claimed in claim 1, characterised by adjusting the copper content of the flow which is recirculated to the plating to a value in the range of 5-100 g/l.
- 17. (Amended) A process as claimed in claim 16, characterised by adjusting said copper content to a value in the range of 15-30 g/l.
- 18. (Amended) A process as claimed in claim 1, characterised by adjusting the content of anion from the used acid to a value in the range of 25-250 g/l in the flow which is used in the plating.
- 19. (Amended) A process as claimed in claim 1, characterised in that the content of anion from the used acid is substantially the same in the copper recovery operation as in the plating operation.

20. (Amended) A process as claimed in claim 8, characterised by carrying out the pulse plating without any additives of the kind which is used in non-pulse plating of printed boards.

Cord

- 21. (Amended) A process as claimed in claim 1, characterised by reducing the content of alkaline substance originating from the etch bath and/or reducing the content of organic material originating from the extraction in the flow which is recirculated to the plating before subjecting the same to said plating.
- 23. (Amended) A process as claimed in claim 21, characterised by carrying out said reduction (- s) by means of one or more filters and/or ultrafilters.

py

- 24. (Amended) A process as claimed in claim 1, characterised by removing colloidal copper before the plating from the flow which is recirculated to the plating.
- 25. (Amended) A process as claimed in claim 1, characterised by using as equipment for said extraction one or more extractors of the type in which the separation takes place by means of energy supplied from the outside.

Please add the following new Claims 26 to 43:

ph

26. (New) A process according to claim 1 wherein said alkaline etch both is an ammoniacal etch bath.

- 27. (New) A process according to claim 1 wherein said acid of said aqueous solution of an acid is sulphuric acid.
- 28. (New) A process as claimed in claim 1, characterised by adjusting the copper content so that the ratio of copper content of said acid solution is >0.5:1.
- 29. (New) A process as claimed in claim 6, characterised by adjusting the copper content so that the ratio is in the range of 0.75:1 0.95:1.
- 30. (New) A process as claimed in claim 1, characterised by carrying out the plating in the form of pulse plating with square pulses of current intensity.
- 31. (New) A process as claimed in claim 8, characterised by carrying out the pulse plating with a pulse length of the wave-shaped pulses in the range of 10-50 ms.

- 32. (New) A process as claimed in claim 8, characterised by adjusting the period of time during which the printed board acts as cathode in the pulse plating to a value in the range of 10-100 s.
- 33. (New) A process as claimed in claim 8, characterised by adjusting the period of time during which the printed board acts as anode in the pulse plating to a value in the range of 1-10 s.
- 34. (New) A process as claimed in claim 8, characterised in that the maximum current intensity during the period of time when the printed board acts as cathode in the pulse plating is 5 A/dm<sup>2</sup>.
- 35. (New) A process as claimed in claim 8, characterised in that the maximum current intensity during the period of time when the printed board acts as cathode in the pulse plating is 3 A/dm<sup>2</sup>.
- 36. (New) A process as claimed in claim 8, characterised in that the maximum current intensity during the period of time when the printed board acts as anode in the pulse plating is 10 A/dm<sup>2</sup>.

- 37. (New) A process as claimed in claim 8, characterised in that the maximum current intensity during the period of time when the printed board acts as anode in the pulse plating is  $5 \text{ A/dm}^2$ .
- 38. (New) A process as claimed in claim 1, characterised by adjusting the copper content of the flow which is recirculated to the plating to a value in the range of 10-50 g/l.
- 39. (New) A process as claimed in claim 16, characterised by adjusting said copper content to a value in the range of 20-25 g/l.
- 40. (New) A process as claimed in claim 1, characterised by adjusting the content of anion from the used acid to a value in the range of 50-200 g/l in the flow which is used in the plating.
- 41. (New) A process as claimed in claim 21, characterised by carrying out said reduction (- s) by means of one or more charcoal filters and/or ultrafilters.
- 42. (New) A process as claimed in claim 22, characterised by carrying out said reduction (- s) by means of one or more filters and/or ultrafilters.

